

**PROGOMPHUS LAMBERTOI (ODONATA: ANISOPTERA: GOMPHIDAE),  
A NEW SPECIES FROM MEXICO**

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*Abstract.*—*Progomphus lambertoi*, n. sp. (holotype ♂ from La Chichihua, State of Michoacán, México) (1,127 m asl; 18° 44.812 N; 103° 13.379 W), is described and illustrated. It appears closely related to *P. borealis* McLachlan, from which it can be distinguished by its smaller stature, paler coloration, enlarged and carinated hook of the posterior hamule, and male cerci not basoventrally carinated.

*Resumen.*—Se describe e ilustra a *Progomphus lambertoi*, sp. nov. (holotipo ♂ de La Chichihua, estado de Michoacán, México) (1,127 m snm; 18° 44.812 N; 103° 13.379 W). La especie nueva es muy parecida a *P. borealis* McLachlan, de la cual se diferencia por su talla menor, coloración más pálida, el gancho del hamulus posterior alargado y carinado, y los cercos del macho sin carina ventrobasal.

*Key Words:* Odonata, Gomphidae, *Progomphus lambertoi*, new species, México

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Recently, I described a new species of *Progomphus* from Michoacán State (Novelo-Gutiérrez 2007) belonging to the *pygmaeus* group (Belle 1991), which brought the current total number of species for Mexico to 11. Here I describe another new species, but belonging to the *obscurus* group (Needham 1941, Belle 1991), closely related to *P. borealis* McLachlan, which increases to 12 the species occurring in Mexico, and to 69 for the entire genus.

***Progomphus lambertoi* Novelo-Gutiérrez,  
new species**

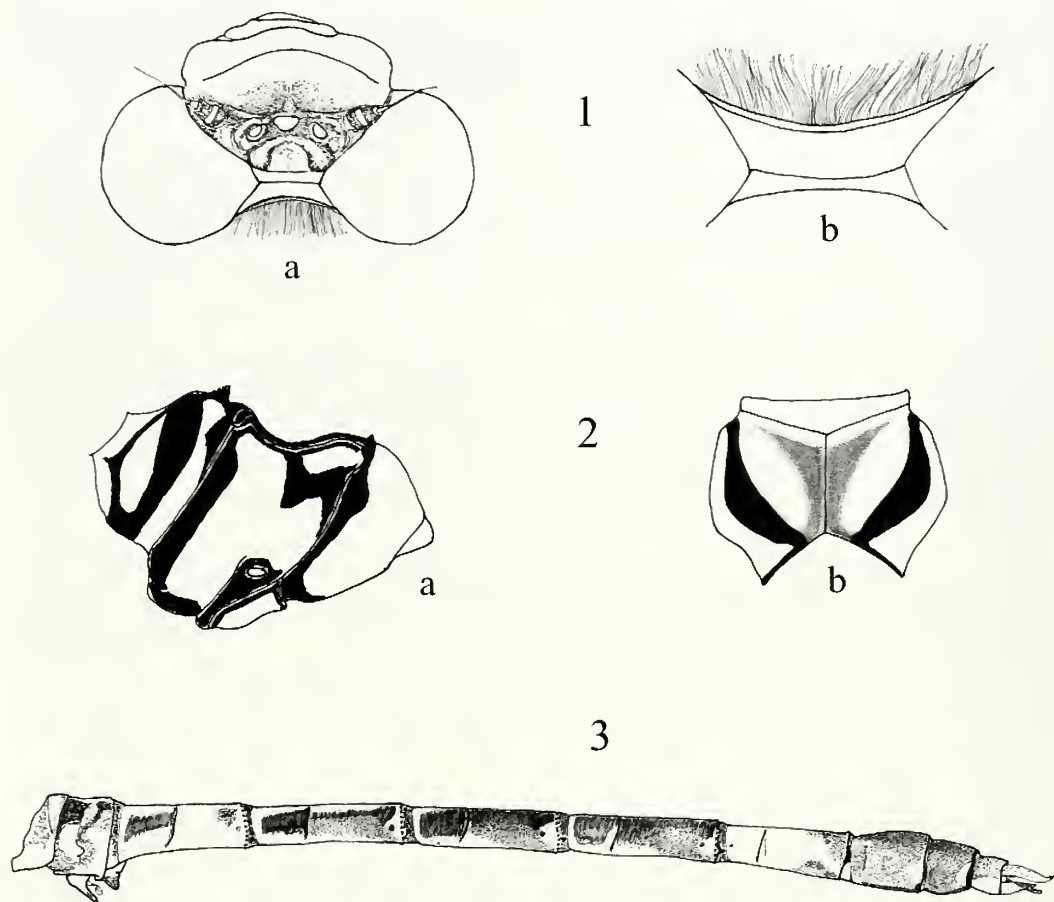
(Figs. 1–3, 4a–b, 5a–b, 6, 7a–b)

*Material.*—Holotype ♂: MEXICO: State of Michoacán, Municipality of Coalcomán, La Chichihua (1,127 m asl; 18° 44.812 N; 103° 13.379 W), 21-IV-2006, R. Novelo. J.A. Gómez leg. Deposited in Colección Entomológica del

Instituto de Ecología, A.C., Xalapa (IEXA). Paratypes: (3 ♂) same data as holotype; (1 ♂) same data as holotype but 02-IV-2005. Other specimen: (1 teneral ♂ in ethanol), not included in paratype series, same data but: Municipality of Tepalcatepec, Pinolapa, Río Pinolapa (616 m asl; 19° 00.524 N; 103° 01.456 W), 28-III-2005; paratypes and other specimen deposited in IEXA.

*Etymology.*—This species is dedicated to the memory of the late Dr. Lamberto González Cota, friend and colleague, for his encouragement in the study of the entomofauna of Michoacán State.

*Male (holotype).*—*Head:* Labium creamy pale, setae reddish; eye color in life gray violaceous; antenna dark brown, black basally. Labrum, base of mandible, gena and anteclypeus creamy pale; postclypeus, antefrons and anterior half of postfrons pale green, basal half of



Figs. 1-3. *Progomphus lambertoi* (holotype ♂). 1a, Head, dorsal view. 1b, Detail of occiput. 2a, Color pattern of pterothorax, left lateral view. 2b, Color pattern of mesepisterna, dorsal view. 3, Color pattern of abdomen, left lateral view.

postfrons brown (Fig. 1a); vertex pale green, interocellar area brown, postocellar ridge concave at middle; a deep furrow between vertex and occiput; occiput pale green (Fig. 1b), its posterior border thick, yellowish orange, widely concave, beset with a fringe of long whitish setae; posterior area of head with a central, pale green, rectangular spot, dark brown at sides.

**Thorax:** Prothorax with anterior lobe black, anterior margin pale; midlobe pale at sides, brown at middle; posterior lobe pale with posterior border black. Pterothorax (Fig. 2) with mesepisternum pale green with brown markings as follows: a diffuse, reddish brown, tri-

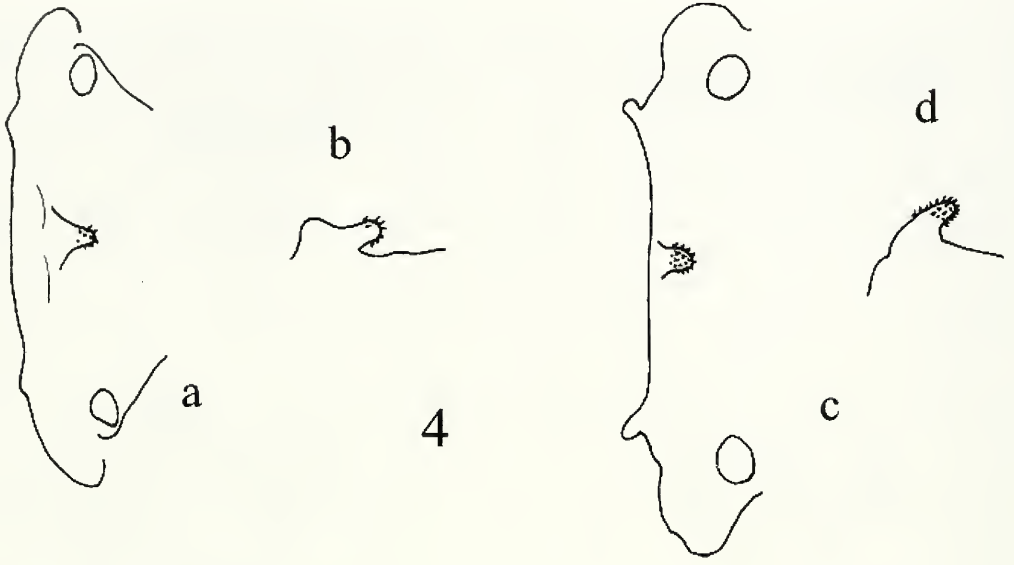
angular spot on each side of middorsal carina and antealar crest, a wide antehumeral stripe tapering on both ends, upper end connecting to triangular spot described above; dorsal carina and mesothoracic collar pale, antealar crest brown; mesokatepisternum pale, with a brown, rectangular spot on posterior half; brown humeral stripe complete, connecting to antehumeral stripe by a narrow, transverse bridge at upper 0.20 its length; mesepimera and metepisterna mostly gray violaceous; interpleural (midlateral) brown stripe lacking; metakatepisternum pale green; metaspiracle black, brown around it; brown stripe complete on metapleural suture,

abruptly widening at upper end, entering as a wide band over the upper third of metepisternum, leaving an isolated, dorsal, pale spot and reaching subalar carina; metepimera creamy pale; sternum pale green. Wings hyaline with a tint of brown at extreme base hardly reaching basal subcostal crossvein; anterior edge of costa yellow including basal 0.40 length of pterostigma. Venation: Fore wing (FW) with 7 paranal cells and 5 and 7 supplementary cells posterior to them (left and right wings, respectively), area posterior to Cu2 one cell wide for first 3 cells then increasing to 2 cells for a distance of 3 cells then increasing to 3 cells for a distance of 4 cells, then decreasing to 2 cells for a distance of one cell then decreasing to one cell for a distance of one cell; first and fifth antenodals thickened in all wings; antenodal crossveins (anx) on FW 13/14, on HW 10/10; postnodal crossveins (pnx) on FW 10/10, on HW 8/8; basal subcostal crossvein present in all wings; triangles 3-celled on FW, 4- and 2-celled on left and right HW respectively, subtriangles 2-celled in FW and right HW, 1-celled in left HW; pterostigma light yellow brown, surmounting 5 cells in left wings, 6 cells in right wings. Legs: coxae yellowish green laterally, light brown anteriorly; trochanters yellowish green lateroposteriorly, anterior surfaces of meso- and metatrochanters dark brown and reddish brown on basal and distal trochanters, respectively; femora with a complex color pattern of longitudinal pale bands intercalated with reddish-brown stripes; tibiae, tarsi, and basal 0.60 of claws yellowish brown, armature and apical 0.40 of claws black; hind tibia 0.70 length of hind femur; hind tarsi (excluding claws) 0.75 length of hind tibia.

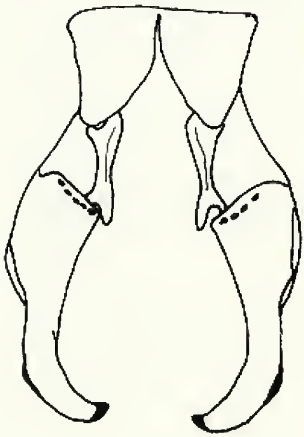
*Abdomen* (Fig. 3): Segments 1–6 light brown, with gray violaceous markings on inferolateral areas of 1–3 and auricles, auricles with 8–9 black tubercles, also

with creamy pale markings as follows: a dorsal stripe on 2–4 tapering posteriorly becoming a mere line on 5–6, entire area posterior to transverse carina on 3 except for a subapical dorsal light brown spot to each side of midline, a narrow basal ring connecting to middorsal stripe as well as to inferolateral stripe which runs along basal half on 4–6, a distolateral spot on each side on 4–6, transverse carina on 3–7 black; segment 7 mostly creamy pale, with a dorsal, triangular, light brown area on apical 0.40, as well as an irregular light brown spot on distolateral areas; segments 8–10 reddish brown dorsally, light brown laterally, with a pale spot on distolateral areas of 8–9; inferolateral margin of 10 pale. Abdominal segment 1 with a small (0.2 mm), yellow, midventral spiny tubercle located at basal 0.20 length of sternite (Figs. 4a,b), directed caudad, with most spines at extreme tip (Fig. 4b); anterior hamule small (Fig. 5a) dark brown, widely emarginated apically; posterior hamule (Figs. 5a,b) yellow with apex black, a row of 4–5 black, low, basoventral tubercles, external margin of hook carinated, carina reddish brown except for a black midcentral area. Cercus (Fig. 6) entirely creamy pale except on basoventral 0.40 which is light brown, not carinated, and with 15–16 black, low tubercles not arranged in a row (Fig. 6b); spines at tip of cercus black; tip of cercus divergent (Fig. 6a) and slightly upturned (Fig. 6c). Lobes of epiproct in ventral view curved inward (Fig. 7a), tips bifid, the ventrointernal branch largest, yellow, with 2–3 sharp, black tubercles at tip, superoexternal branch low, brown, rounded with a very small tubercle at tip (Fig. 7b); epiproct reaching basal 0.80 length of cerci (Fig. 7a). Paraprocts with an apical lobe bearing numerous, long, reddish, stiff setae.

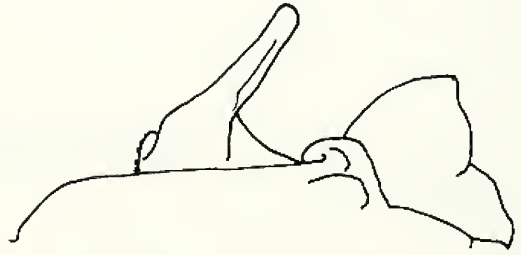
*Measurements* (mm): Total length (incl. cerci) 52.0, abdomen 39.0, hind



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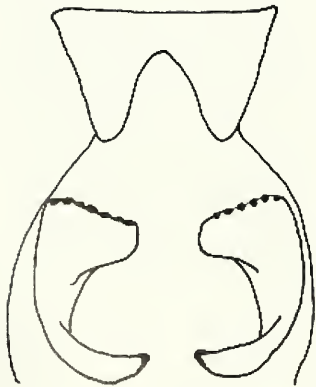


a

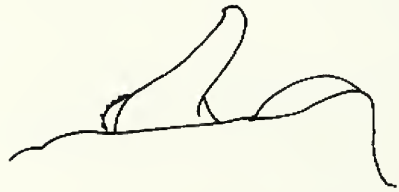


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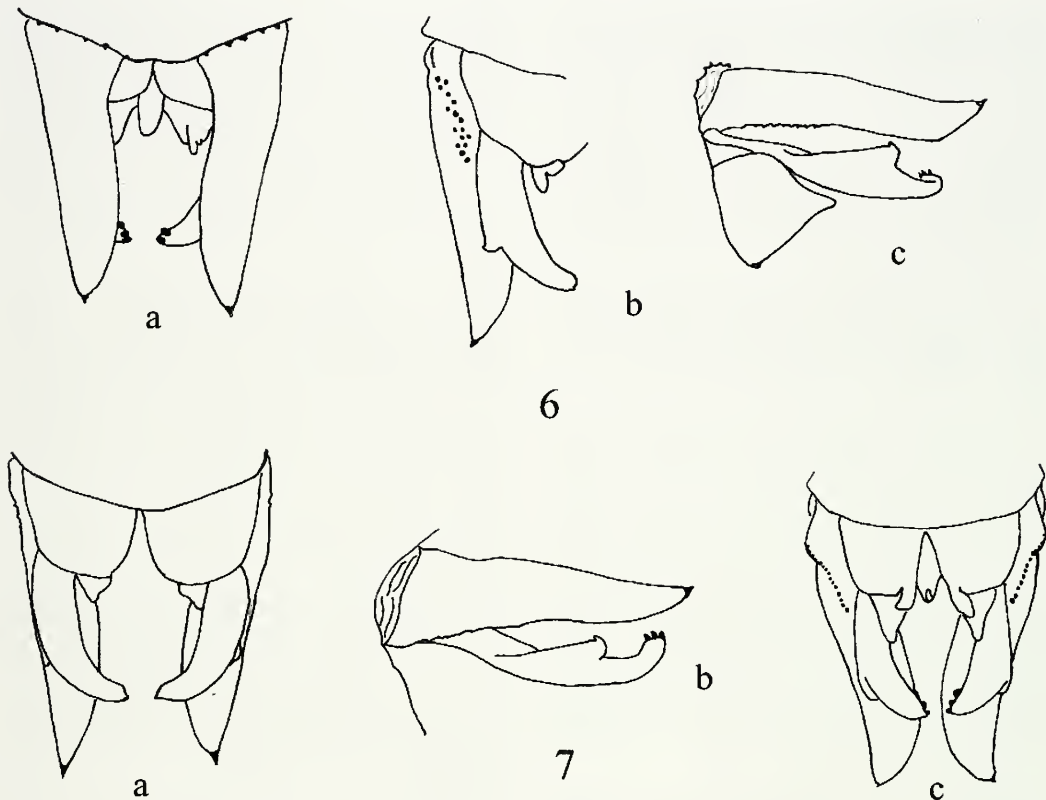


c



d





Figs. 6–7. Details of caudal appendages of male *Progomphus*. 6, *P. lambertoi*: a, dorsal view of cerci; b, ventrolateral view of right cercus showing basal black tubercles not arranged in a row, and absence of ventrobasal carina; c, left lateral view of cercus and epiproctal lobe. 7, a: ventral view of epiproctal lobes; b: laterodorsal view of cercus and epiproctal lobe; c: ventral view of caudal appendages (a–b, *P. lambertoi*; c, *P. borealis*).

wing 30.0, pterostigma of fore wing 4.0, fore tibia 3.5, hind femur 5.0, cercus 1.7 (measured dorsally along internal margin).

Female.—Unknown.

Variation in paratypes.—In three individuals, there is no connection between the humeral and antehumeral brown stripes; the individual collected on 2 April 2005 has the dark coloration less defined (perhaps due to its young condition). Wing venation: one individual has

6 paranal cells in the right wing, two individuals have 4 supplementary cells behind the paranal cells, and other two have 4–5 supplementary cells. The nodal formula is highly variable, as follows: FW anx 12–14, pnx 7–10; HW anx 9–11, pnx 7–9; one individual lacks a basal subcostal crossvein in the right HW and its FW triangle has 2 cells; the number of cells in the HW triangles and subtriangles varies from 2–3 and 1–3, respectively. The area posterior to Cu2 varies only

Figs. 4–5. Details of morphology of male *Progomphus*. 4, Partial view of sternum of abdominal segment 1 showing ventral tubercle in ventral (a and c) and left lateral (b and d) views (a–b, *P. lambertoi*; c–d, *P. borealis*). 5, Accessory genitalia: a and c, ventral view of hamuli (anterior hamuli omitted in c); b and d, left lateral view of posterior hamuli (notice lateral carina on hook in b) (a–b, *P. lambertoi*; c–d, *P. borealis*).

in the distal half. The number of cells surmounted by the pterostigmata is usually 5 but ranges from 4 to 7. One individual has 4 black basoventral tubercles on each posterior hamule, and another has 6. Likewise, the number of basoventral black tubercles on the cerci varies from 13 to 18.

Measurements (mm): Total length (incl. cerci) 49.5–53; abdomen 37–39.5; hind wing 28.7–30; pterostigma 3.6–4.3; fore tibia 3.5–3.7; hind femur 4.8–5.0; cerci 1.7–1.8

Remarks.—Males of *Progomphus lambertoi* were captured at shallow rocky streams, around 11:00 h on sunny days. They were perching on small rocks where the water flow is moderate. Apparently the flying season is restricted to the first half of spring as they could not be found other times of the year despite systematic searches during two consecutive years, as well as previous non-systematic searches over a 4-year period.

Discussion.—*Progomphus lambertoi* belongs to the *obscurus* group (Belle 1991) (subgenus *Neaprogomphus* Carle [Tennessen 1992]) by the presence of a small ventral tubercle on abdominal segment 1. *Progomphus lambertoi* appears more closely related to *P. borealis* than any other species of the *obscurus* group, from which it is easily differentiated by the following characteristics (those of *P. borealis* in parentheses): smaller stature, 49.5–53.0 mm (larger, 57–62 mm); dark coloration light brown to reddish brown (brown to dark brown); vertex mostly pale (mostly dark); occiput 0.4 mm in length, posterior margin widely concave (0.8 mm in length, posterior margin sinuate); antehumeral dark stripe separated from humeral stripe by a pale stripe (pale stripe absent, usually a very wide, unique dark band); brown stripe on metapleural suture branching at upper end (unbranched); ventral tubercle on abdominal segment 1 at basal 0.20 the length of the sternite, directed caudad (Figs. 4a,b) (only on the

anterior margin, directed ventrocaudad [Figs. 4c,d]); auricles with 10 or fewer black tubercles (with 25 or more); hook of posterior hamule enlarged, its basal half more or less straight, then curved inward, thus the apex of the hook is 1.0–1.1 mm beyond the internal angle of the base of the hamule (Fig. 5a) (hook not enlarged, strongly incurved all the way [Fig. 5c]); hook of posterior hamule partially carinated externally (Fig. 5b) (rounded, not carinated [Fig. 5d]); male cercus not basoventrally carinated, basoventral black tubercles 13–18, not arranged in one row (Fig. 6b) (strongly carinated, basoventral black tubercles 8–10 arranged in one row along the carina); internal margin of paraproctal lobe, in ventral view, more or less straight at basal 0.70, then abruptly incurved at apical 0.30 (Fig. 7a) (slightly concave along the internal margin [Fig. 7c]); and ventrointernal branch of paraproctal lobe with 2–3 sharp, black tubercles at tip (usually with 4 such tubercles).

The new species in Belle’s (1973) key will key out as follows:

- 25. Third femora brown or light brown with pale markings . . . . . 25a
- Second and third femora brown . . . . . 26
- 25a. Posterior hamuli enlarged (1.5 mm length measured laterally), lateral margins carinated; midventral process on abdominal segment 1 at basal 0.20 the length of the sternite, directed caudad; male cercus without basoventral carina, and basoventral black tubercles not arranged in one row . . . . . *lambertoi*
- Posterior hamuli not enlarged but strongly incurved all the way (1.1 mm length), lateral margins rounded, never carinated; midventral process on abdominal segment 1 at the anterior margin, directed ventrocaudad; male cercus strongly carinated on basoventral area with black tubercles arranged in one row . . . . . *borealis*

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